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CORPS OF ENGINEERS WALTHAM MA NEW ENGLAND DIV
FINAL ENVIRONMENTAL IMPACT STATEMENT ON DEBRIS REMOVAL FROM BOS--ETC(U)
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BOSTON HARBOR, MASSACHUSETTS

FINAL ENVIRONMENTAL IMPACT STATEMENT

ON

DEBRIS REMOVAL

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS

DECEMBER 1979
(REVISED MAY 1980)

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) ➤ This report describes a project for a one-time cleanup program to rid Boston Harbor of its sources of debris. These sources have presented a potential hazard to navigation, and have suppressed land values. The sources of the debris are cited in the report, the environmental impacts are considered, and alternatives presented.		

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FINAL
ENVIRONMENTAL IMPACT STATEMENT
ON
DEBRIS REMOVAL
FROM

BOSTON HARBOR, MASSACHUSETTS,
of debris

Final feasibility study.

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DECEMBER 1979
(REVISED MAY 1980)

New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

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SUMMARY

Boston Harbor, Massachusetts Debris Removal

() Draft

(X) Final Environmental Statement

Responsible Office: U.S. Army Engineer Division, New England, Waltham,
Mass.

1. Name of Action: () Administrative (X) Legislative

2. Description of Action: The project provides for a one-time cleanup program to rid Boston Harbor of its sources of debris. These sources are potentially hazardous to navigation, suppressant to land values and aesthetically unpleasant. The sources are dilapidated shore-front structures, derelict (wrecked) timber vessels and loose onshore debris. Existing floating debris will also be removed from the Harbor area. All debris would be delivered to one or the other of two staging areas, crushed and compacted, loaded onto trucks and taken to a sanitary landfill in Marshfield for burial.

3. a. Environmental Impacts: The project would have significant positive impacts on future uses of the Harbor, particularly recreational boating, in terms of improved navigational safety, as well as on general economic activity around the Harbor.

b. Adverse Environmental Effects: The cleanup activities would have minor negative impacts including displacement or destruction of organisms living on or around the wreckage or piers to be removed, including destruction of small numbers of benthic organisms, slight disturbance of Harbor sediments leading to temporary increases in turbidity and minor releases of heavy metals, minor noise and visual disturbance, minor increase in traffic on roads to the disposal area, and some dislocation of marginal economic enterprises at present operating on or from derelict piers. Some of the debris sources may be of historic/archaeological value, but mitigative action, where appropriate, should minimize potentially adverse impacts.

4. Alternatives:

- a. No action.
- b. Dredging to allow use of deep draft barges in shallow areas during the debris removal process.
- c. Disposal by burning at an incinerator.
- d. Disposal by burning in barges in the open sea.
- e. Disposal by reuse of the debris.

5. Comments Received on the Draft EIS (Issued July 1978):

a. Federal

Advisory Council on Historic Preservation
Department of Commerce
Department of Housing and Urban Development
Department of Interior
Environmental Protection Agency
U.S. Coast Guard

b. State

Massachusetts Historical Commission

c. Regional

Metropolitan District Commission

d. Local

Chairman, Boston Conservation Commission
City of Boston Redevelopment Authority

e. Organizations and Others

Donald Falk, Somerville, MA
Jeremy J. Hatch, Boston, MA

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INDEX OF CHANGES TO THE DRAFT STATEMENT

The following index identifies substantive changes made to the Draft Statement in preparing the Final Statement, including those necessitated by comments received on the Draft.

<u>Paragraph in the Draft Statement</u>	<u>Description of Change</u>
Cover, Title Page and Summary	Changed project title from 'Removal and Disposal of Sources of Floatable Debris' to 'Debris Removal'.
Summary-item 2, line 2	Changed 'sources of floatable debris' to 'sources of debris'.
Summary-item 2, line 5	Changed 'derelict (wrecked) vessels' to 'derelict (wrecked) timber vessels'.
List of Tables-Number 4	Changed 'Waters' to 'Sediments'.
1.01	Changed 'sources of floatable debris' to 'sources of debris'.
1.01	Deleted the second sentence, which referred to development of the Draft EIS under the 1974 Corps of Engineers Regulation concerning preparation and coordination of environmental statements. The Final EIS has been guided by both the 1974 Regulation and guidance from Corps of Engineers headquarters relating to a new superseding Regulation, still in Draft form, as it would relate to this specific statement.
1.03, line 4	Changed 'sources of floatable debris' to 'sources of debris'.
1.03, line 7	Changed 'derelict (wrecked) vessels' to 'derelict (wrecked) timber vessels'.
1.07, line 3	Changed 'sources of floating debris' to 'sources of debris'.
1.07, line 5	added: 'encompassing 3,199,300 cubic feet of floatable materials. The removal effort also includes non-floatable material; that form some part of certain dilapidated structures as well as materials confined within holds of wrecked vessels. The amount of non-floatable materials is small, totalling about 4500 tons.

1.08	Changed 'While these seemingly unauthorized dumps' to 'While these dumps'.
1.09	Changed \$15,827,971 to 19,464,000 Changed \$1,057,000 to \$1,447,700 Changed \$1,422,800 to \$1,548,400 Changed '1.35 to 1' to '1.07 to 1'
1.17, lines 9, 10	Changed 'would require a minimum of \$1,600,000 ' to 'would require 1,900,000', and changed 'Appendix 3, Table 2' to 'Appendix 3, Table 1'.
2.21, line 2	Changed 'primary diatoms' to 'primarily diatoms'.
2.21, line 6	Changed 'faunal species, being indicators' to 'faunal species, some of which are indicators'.
2.21, line 18	Changed 'bloodworms, and sea worms' to 'bloodworms, other sea worms'.
2.23	Changed 'Rare and Endangered' to 'Threatened and Endangered' in two places.
TABLE 4	In title, changed 'INNER HARBOR WATERS' to 'INNER HARBOR SEDIMENTS'.
2.32	Deleted the first sentence: 'The air pollutant of greatest concern in the Boston area is total suspended particulates'. Corrected the TSP data to indicate that, at the Kenmore Square monitoring station in Boston, in 1976, the primary standard was exceeded twice, and the secondary standard, eighteen times.
4.09, line 12	Changed from \$617,000 to \$705,000 and added 'over the life of the project'.
4.11, line 1	Changed 'removal of floating debris will' to 'removal of debris and its sources will'.
4.19, line 5	Deleted the final sentence: 'Most are expected to find new locations without difficulty'.
6.01	Changed \$15,828,000 to \$19,464,000 Changed \$1,370,673 to 1,440,800 Changed 2020 to 2035

6.04, line 7

Changed 'required to obtain a dredging permit which will compare' to 'required to compare'.

6.06

Changed 'project costs of \$1,600,000 to \$2,600,000' to 'project costs of \$1,900,000'. Changed 'Appendix 3, Table 2' to 'Appendix 3, Table 1'.

6.07, line 7

Changed 'would cost an additional \$850,000 to \$1,200,000' to 'would cost an additional \$1,018,000'.

9.05

Added reference to 1 November 1979 letter from Governor King.

9.06-9.07

Changed to update the description of the coordination process relative to the Final EIS.

APPENDIX A

CORRESPONDENCE RECEIVED PRIOR TO ISSUANCE OF THE DRAFT EIS - Adds the Conservation and Development Report from the U.S. Fish and Wildlife Service.

APPENDIX B

COMMENTS AND RESPONSES ON THE DRAFT EIS - Includes comments that were received during the Draft EIS review period and responses of the Corps of Engineers.

FINAL ENVIRONMENTAL IMPACT STATEMENT

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1.00 PROJECT DESCRIPTION

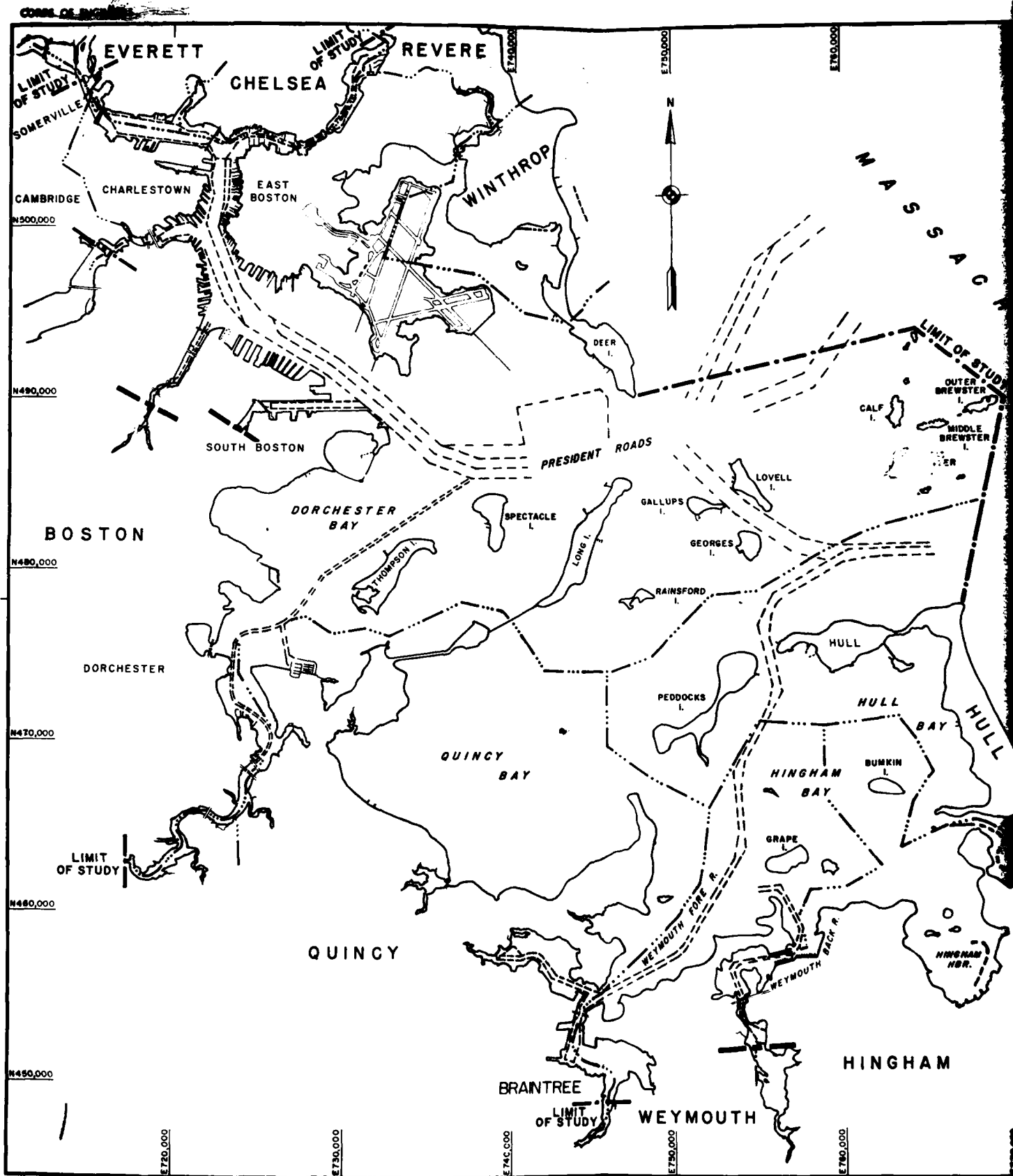
1.01 Introduction.

This report is prepared in association with the Feasibility Report for the removal and disposal of sources of debris in Boston Harbor.

1.02 This Final Environmental Statement is intended to be a concise and readable document. Since it has been made comprehensive so that the impacts of the project are clear without cross-references, this document has necessitated some duplication. Some detailed back-up information is contained in appendices to the Feasibility Report and is cross-referenced. As this project does not involve severe or controversial impacts, however, the need for such references is limited.

1.03 The purpose of the overall study has been to determine the engineering feasibility, economic justification, legality and environmental acceptability for Federal participation in a one-time cleanup program to rid Boston Harbor of its sources of debris. These sources are potentially hazardous to navigation, suppressant to land values and aesthetically unpleasant. The debris sources are dilapidated shorefront structures, derelict (wrecked) timber vessels and loose on-shore debris. Existing floating debris will also be removed from the Harbor area. This study was conducted in response to a resolution adopted on 18 March 1966 by the Committee on Public Works of the United States Senate.

1.04 The study area is described on Figure 1. It is limited to the tidewater zone of approximately 47 square miles lying landward of a line from Point Allerton at Hull to the tip of Deer Island. The study area also includes the following waters tributary to the Harbor: Weir River, Weymouth Back River, Weymouth Fore River to Lower Dam, Town River, Neponset River to Lower Dam, Reserved Channel, Fort Point Channel, Charles River to Lower Dam, Little Mystic River, Mystic River to Lower Dam and Chelsea River. Finally, it includes the shorefront tidal area of each island within the Harbor. Twelve communities abut Boston Harbor. Proceeding clockwise from the south, they are the following: the Towns of Hull, Hingham, Weymouth, and Braintree; the Cities of Quincy, Boston, Cambridge, Somerville, Everett, Chelsea, and Revere; and the Town of Winthrop.



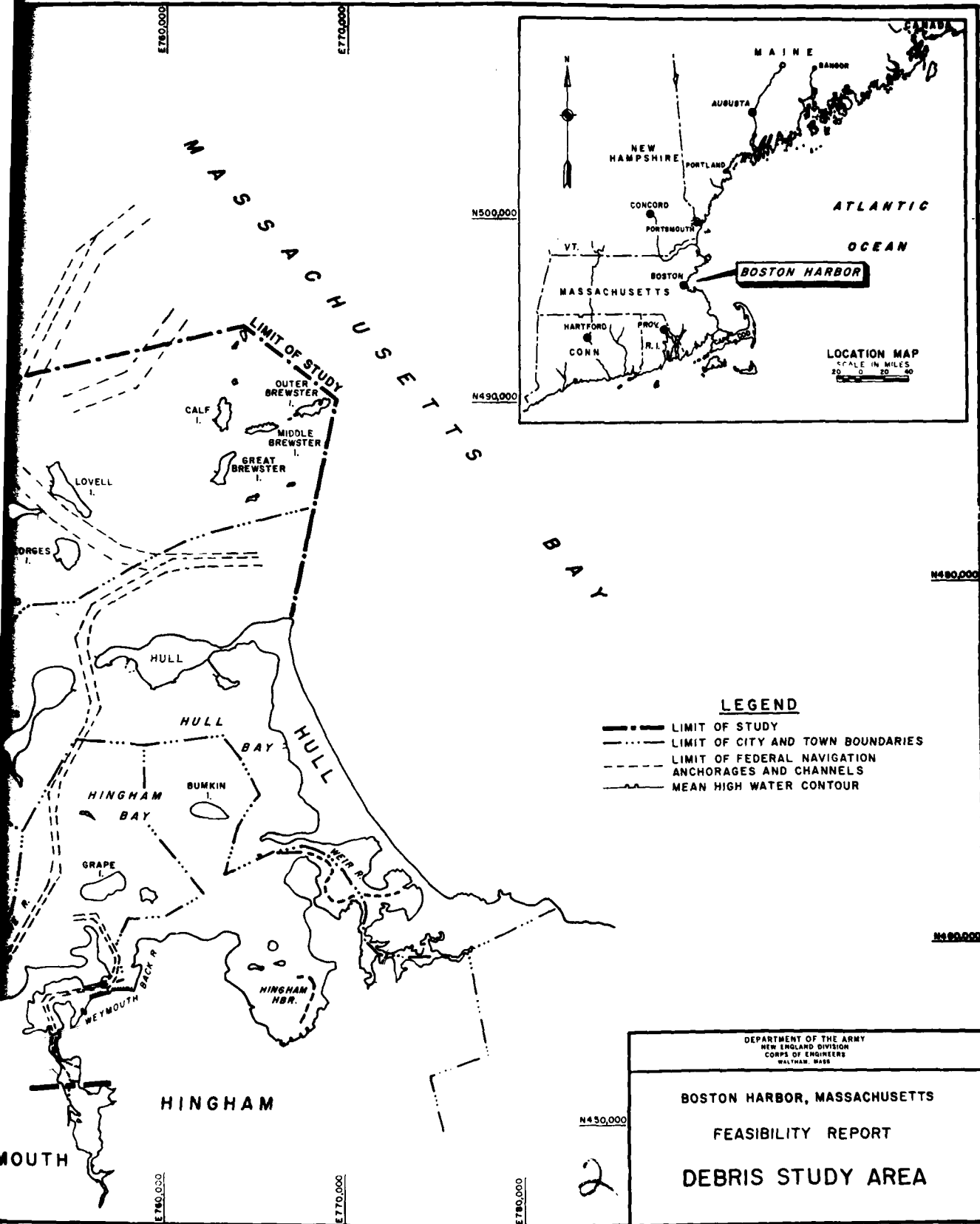


FIGURE 1

1.05 A number of Congressionally authorized reports have been prepared by the Corps of Engineers concerning the need for debris removal in Boston Harbor. These reports were written prior to 1973 when the Office of Management and Budget, in its review of a similar study report for the New York Harbor, decided that removal and disposal of sources of floatable debris were solely the responsibility of non-federal interests. Consequently, a brief negative report on the Boston Harbor debris study was submitted.

1.06 Because of renewed interest by Congress in this problem as evidenced by the 1974 Water Resources Development Act which authorized a debris removal project in New York Harbor, this study was resumed.

1.07 Detailed Description of the Project.

The project involves the removal and disposal of dilapidated wooden structures such as piers and wharves, sunken wooden vessels and piles of on-shore debris which are the sources of debris. A total of 262 derelict structures, 55 sunken wooden vessels and 168 piles of loose on-shore debris have been identified in the Harbor, encompassing 3,199,300 cubic feet of floatable materials. The removal effort also includes non-floatable materials that form some part of certain dilapidated structures as well as materials confined within holds of wrecked vessels. The amount of non-floatable materials is small, totalling about 4500 tons. In addition, existing floating debris is to be collected and disposed of.

1.08 There are also five shorefront dumps in the study area, all located within the City of Boston. While these dumps have been identified, located and recorded in the inventory of debris sources (Appendix 4, page A-1 of the Feasibility Report), the 1977 inventory update found each of these five dump areas no longer to be a potential source of floatable debris. Field examination revealed that each dump is composed of non-floatable material and/or rubbish material and the latter is not considered a hazard to navigation. Therefore, no further consideration has been given to shorefront dumps in this report.

1.09 Total estimated first costs for the project equal \$19,464,000 with total average annual costs over the 50 year life of the project estimated at \$1,447,700 and total average annual benefits at \$1,548,400. The benefit-cost ratio is therefore 1.07 to 1.

1.10 A plan for collecting existing floating debris has not been specified, but will be chosen by the contractor at the time of implementation. However, any method likely would be based on the use of a catamaran-type vessel.

1.11 The proposed method of removal of structures and other sources of debris is by the use of a hydraulic clamshell. This type of machine can be operated either from land or mounted on a shallow draft barge and

may be fitted with a vibrator for pulling difficult piles. This method has been successfully used for similar debris clearance at Liberty State Park, New Jersey as part of the New York Harbor debris removal project. Photographs of this procedure are shown in Appendix 1 of the Feasibility Report in Figures D-1 and D-2, where the clamshell is operating from a specially converted LASH barge whose interior has been filled with styro-foam to maintain floatation if the barge is holed.

1.12 One possible alternative removal method would involve the use of heavier equipment mounted on relatively deep draft barges which would require dredging in shallow areas in order to gain access to the derelict structures. This would result in significant negative impacts both at the site of the dredging and at the spoil area. Based on experience elsewhere, however, it is doubtful whether a contractor using heavy equipment will be able to competitively bid for this project since the cost of dredging would undoubtedly outweigh savings in demolition time. For this reason the impacts of dredging have not been studied in detail at this time. If dredging were to become a serious possibility, a supplement to this Final Environmental Impact Statement would be issued.

1.13 After collection and removal, the debris will be taken by barge to the staging area at the South Boston Navy Yard or at the Hingham Industrial Center. Here the debris will be crushed and compacted by bulldozer and loaded onto trucks. About 93% of the total debris will be taken to the South Boston Navy Yard and the remainder to Hingham. The debris will be trucked from the staging areas to a privately owned sanitary landfill in Marshfield. The location of the staging areas and the landfill, together with the roads connecting them, are shown on Figure 2.

1.14 The sanitary landfill, which is owned and operated by Sylvester Ray Enterprises Incorporated, is located on Clay Pit Road, Marshfield, about one mile northeast of the junction of Route 3A and Route 139. It is in a 30 acre disused gravel pit. Although the landfill is surrounded by residential areas, it is not visible from any residences.

1.15 This landfill only accepts construction debris, principally wood and masonry. Metals found during burying operations are removed and sold as scrap. The landfill has a total capacity of approximately 2,000,000 cu.yds. The quantity of Harbor debris to be placed there amounts to about 120,000 cu.yds., representing about 6% of the available capacity. The landfill is licensed by the Town of Marshfield and the Commonwealth of Massachusetts and is subject to regular inspection by both governments.

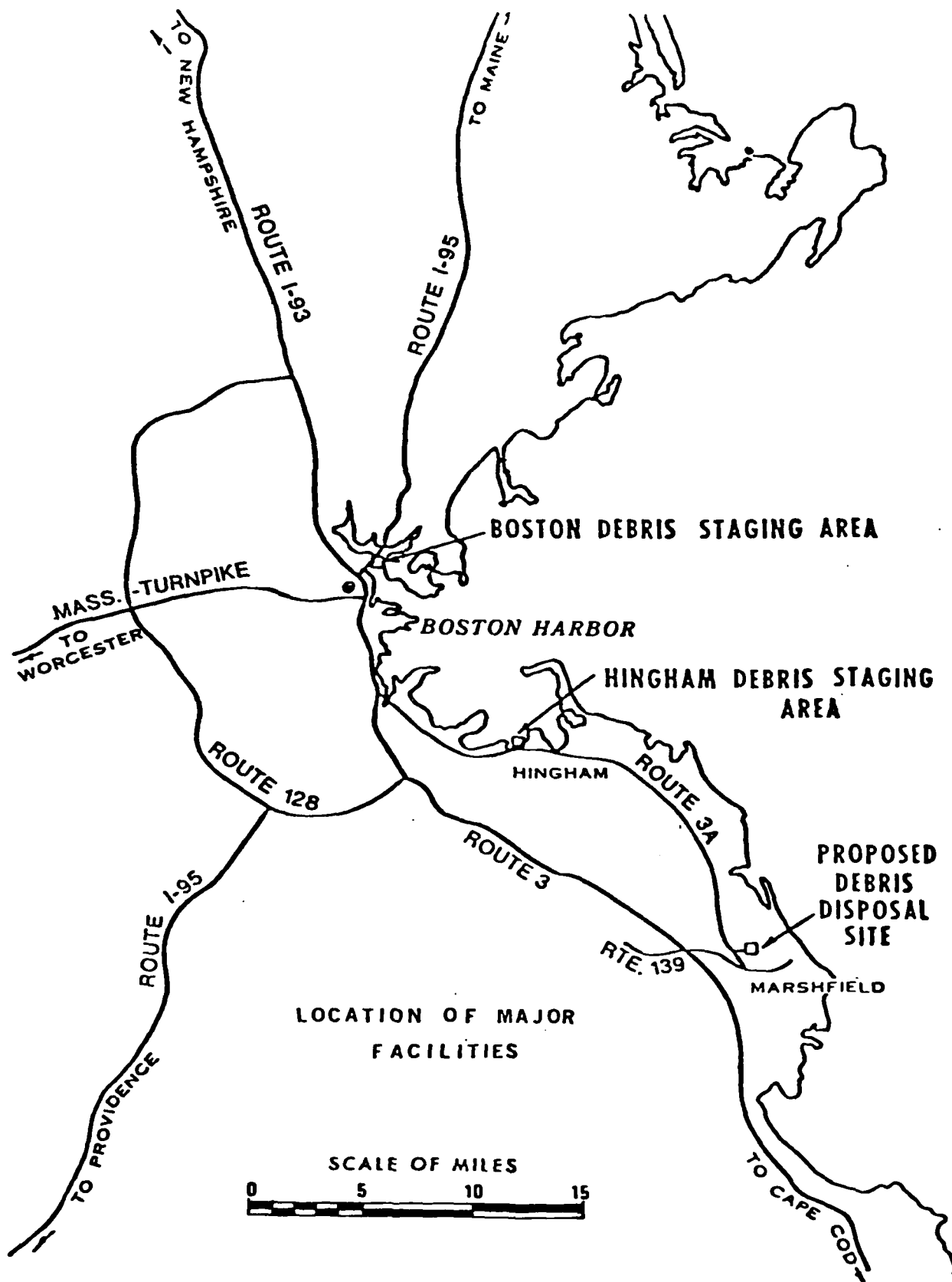


FIGURE 2

1.16 The disposal plan is approved by the Massachusetts Department of Environmental Quality Engineering and includes requirements that the debris be contained in cells and covered with earth. On filling to ground level, the pit must be covered with an impervious soil cover and graded so that precipitation will run off and will not leach through the landfill. This cover must be planted with vegetation.

1.17 As discussed in greater detail in the section on alternatives, it would be preferable to find a re-use for the debris rather than to bury it. However, no feasible or economically competitive alternative for re-use could be found. No commitment could be obtained from a public agency to accept the debris for re-use and the private market is not prepared to accept it for salvage timber. The only potential use that could be found for it is for the production of steam for heating and processes at the Saugus and Braintree incinerators. To implement this usage would require \$1,900,000 in additional expenditure of public funds as may be seen from Appendix 3, Table 1 of the Feasibility Report. This additional cost is not considered justifiable.

1.18 It is possible that a feasible re-use alternative will be identified during the final design stage of the project. If this happens, and the method of re-use does not require any additional expenditure of Federal funds, re-use may be selected. If impacts are different than those already described in this Final Environmental Impact Statement, a supplement will be issued.

2.00 ENVIRONMENTAL SETTING WITHOUT THE PROJECT

2.01 General Description of the Area.

As shown in Figure 1, the project area covers Boston Harbor which is located at latitude 42°N and longitude 71°W. It has an area of 47 square miles at the location of the region's major port and largest metropolitan area.

2.02 The distribution of the debris is shown in Table 1. As can be seen, the City of Boston accounts for nearly one half of the debris sources in the Harbor.

2.03 The Harbor is divided into the Inner Harbor, west of a line drawn from Logan Airport to Castle Island, and the Outer Harbor. Most industrial and port activity, and hence most debris sources, are concentrated in the Inner Harbor.

2.04 Geology and Topography.

The Harbor is part of the Boston Basin, a lowland area surrounded by a ridge of bedrock. Most of the Boston Harbor islands are drumlins, which are rounded hills formed by glacial movements over 10,000 years ago. Others, including Little, Middle, and Outer Brewster, Calf, Green, Raccoon, Hangman, Slate and the small islands of Hingham Harbor, are outcrops of rock.

2.05 The topography of the Harbor has been considerably modified by the filling of marshlands and other shoreline areas resulting in a highly irregular shoreline. Continuous erosion by sea and wind has caused a considerable size reduction in many of the islands and the complete disappearance of some.

2.06 Climate and Hydrography.

Boston Harbor enjoys a temperate climate typical of its latitude and location on the easterly side of a large continent. The average monthly rainfall is between three and four inches. There are an average of 100 clear days, 106 days of partly cloudy weather and 159 days of cloudy weather per year with no distinct seasonal patterns. Fog occurs on the average of two days per month. Mean temperatures vary from about 25°F in January to 78°F in July.

2.07 Prevailing winds in the Harbor are generally from the northwest in the winter and southwest in the summer. Mean wind speeds vary from 11.2 m.p.h. in mid-summer to 14.5 m.p.h. in mid-winter.

TABLE 1

SOURCES OF DEBRIS

Community	Waterfront Structures		Timber Vessels		Loose On-Shore Debris		Total Volume
	No.	Vol. of Debris cu.ft.	No.	Vol. of Debris cu.ft.	No.*	Volume cu. ft.	
Hull	22	30,850	1	100	32	11,900	42,900
Hingham	21	267,375			21	28,100	295,500
Weymouth	11	6,310			21	16,400	22,700
Braintree	2	100			1	200	300
Quincy	18	59,800	10	23,200	7	6,000	89,000
Boston	144	1,940,500	36	196,600	59	66,200	2,203,300
Cambridge	2	4,300					4,300
Somerville	1	9,400			1	2,000	11,400
Everett	3	174,700			5	9,000	183,700
Chelsea	27	223,450	4	47,700	14	37,400	308,600
Revere	3	3,800	3	3,000	3	1,500	8,300
Winthrop	8	26,000	1	1,000	4	2,300	29,300
TOTALS	262	2,746,585	55	271,500	168	181,000	3,199,300

*Number of Locations

2.08 Boston Harbor waters are tidal with a mean tide range of 9.5 ft. at the entrance to Fort Point Channel in Downtown Boston. Spring tide variations reach to about 13 ft. and neap tide variations are down to about 6.5 ft. Tidal currents are at a maximum at the Harbor entrance where they range up to approximately 2.0 knots (The Boating Almanac 1977).

2.09 The Harbor waters are generally calm as they are well protected, but high waves are known in stormy seas. Table 2 shows wave height distribution from 247 observations around the year in the Harbor (Naval Weather Service Detachment, 1976).

TABLE 2 WAVE HEIGHT DISTRIBUTION IN BOSTON HARBOR

<u>Wave Height</u> <u>Range - Feet</u>	<u>% of</u> <u>Observations</u>
≤ 2	76.9
>2 ≤ 4	14.2
>4 ≤ 6	5.3
>6 ≤ 9	2.4
>9 ≤ 12	0.4
>12	0.4

2.10 Development of the Harbor.

The first English settlement in Boston was by Samuel Maverick who settled in Chelsea in 1624. The English civil war of 1642-1649 relaxed controls over colonial trade and stimulated commerce in the colonies. By 1660 Boston handled most of the trade between England and New England. By 1708 Boston and Charlestown had 78 wharves. Long Wharf, which provided direct access for sea going ships, was opened in 1713 and became the focus of shipping activities.

2.11 American independence caused a break in old trading relations and stimulated the forging of new ones. Soon Boston became the leading American port, but New York began to surpass it in the 1820's with its better rail communications connecting it to the rapidly developing western frontiers. However, Boston's international trade continued to prosper until the 1850's when Boston's status started to decline to that of a regional port and the bulk of its trade became coastwise. By 1929 Boston ranked eighteenth nationally in deepwater tonnage while first in coastwise tonnage.

2.12 During this period Boston served the rapidly expanding New England industries which brought their raw materials in by sea, but sold their products on the inland market with the result that imports greatly exceeded exports. Boston was a leading center of shipbuilding and, between 1845 and 1857, it was a worldwide center for the construction of clipper ships. But the shipbuilding industry never recovered from the depression of 1857.

2.13 The first settlers chose easily defensible positions on hills with limited access to the mainland surrounded by good agricultural land and easy access to a protected harbor. Removal of the threat of native Indian attacks ended the need for defenses directed toward the mainland. The rapidly expanding population, industrial and commercial development and the need for communications could not be contained within the restricted area originally chosen. This led ultimately to the filling of many low-lying areas around the City.

2.14 The changing economic circumstances of Boston and the technological developments over the years have led to continual changes in waterfront land uses. Initially all commercial and industrial activity was concentrated at the waterfront. With the construction of canals and railroads, industries developing in the nineteenth century could locate inland. A need was created for waterside railroad terminals complete with warehouses and customs facilities. Later the development of road transport favored areas with good highway connections. In recent times the replacement of traditional "break bulk" methods of handling general cargo by use of containers, roll-on/roll-off ships and LASH barges with their high mechanization and rapid handling times has led to the concentration of port activities in a few areas with highly specialized facilities.

2.15 The development of sea transport for passengers and military personnel required the provision of port facilities to serve them. The subsequent development of air transport has resulted in their decline and abandonment. The development of the U.S. Navy led to the construction of the Charlestown and South Boston Navy Yards as well as the Chelsea Navy Hospital. Recent military cutbacks have resulted in their deactivation.

2.16 These events have left the waterfront with many unused and underutilized facilities. Many have been abandoned. Others have been converted to marginal uses often unrelated to the water such as scrap dumps and piers for tying up fishing boats. Little or no maintenance is carried out.

2.17 Since 1960 the City of Boston, through the Boston Redevelopment Authority, has undertaken a major program of urban renewal to stem the flow of population and employment from the City. This has already involved the conversion of the historical port area into a residential and commercial area. This has included the construction of apartments, an aquarium and parks as well as the conversion of historic warehouses into attractive apartments, offices and retail stores. Docking space has been provided for boats and yachts. This redevelopment has provided a pleasant extension of the City center to the Harbor which it never had before. The City plans the conversion of the de-activated Charlestown Navy Yard into a historical park combined with residences, a hotel, a marina, commercial offices and industrial space. A school and government-subsidized apartment complex also have been built in East Boston.

2.18 Ecological Setting.

Boston Harbor is an urban estuarine environment extensively utilized for fishing, recreation, shipping and commercial and industrial activities. A uniform high level of water pollution exists in the Inner Harbor which restricts the area's use to recreational boating, fishing and industrial activities. The Outer Harbor is suitable for swimming, fishing, boating and shell-fishing with purification. The major sources of water pollution in the Harbor include combined storm drain and sewer overflows, debris and refuse, wastewater treatment effluents, tributary streams and ships and pleasure boats' discharges.

2.19 Dorchester Bay and the Inner Harbor are dominated by the dense development of downtown Boston. Commercial development along the Dorchester Bay and Inner Harbor has largely displaced the natural environment once present. Many of the islands along the shoreline have been used for ecologically undesirable purposes such as prison houses, sewage treatment facilities, dumps and military sites.

2.20 Despite such commercial and industrial development along Inner Harbor waters, a surprising proportion of the total Harbor remains undeveloped. However, these areas are rapidly diminishing. The predominant character of the upland vegetation is thick impenetrable brush while some areas are composed of a variety of trees and shrubs. The water, marshes and terrestrial zones within the Harbor provide habitats for a wide variety of birds, mammals, finfish, shellfish and other animals. Birds are the most abundant form of wildlife, especially on the islands. Existing types include common songbirds, shorebirds and migratory waterfowl and some uncommon species. Significant populations of small mammals such as rabbits, squirrels, raccoons and skunks are

associated with the mainland while rats predominate on the islands. The islands also support a great abundance of different types of insects because of the abundant food and cover provisions.

2.21 Marine life within the Harbor includes various types of phytoplankton (primarily diatoms and dinoflagellates) and zooplankton (mainly crustaceans). Benthic invertebrates vary considerably in distribution and numbers depending on environmental conditions, bottom sediments and available food supply. Polychaetes make up the majority of the infaunal species, some of which are indicators of the generally polluted condition of the Harbor. Some of the marine organisms provide an important recreational and commercial resource. Many of the finfish species existing in the Boston Harbor are actively fished and in fact some, notably flounder and cod, support a valuable commercial industry. Soft-shell clams, blue mussels, crabs and lobsters are also found in the Harbor. Most of the soft-shell clam sites are closed to harvest for human consumption because of pollution (see Appendix 1, Figure B-2). In the remaining areas, shellfish can be harvested only by licensed master diggers or their employees, and must undergo depuration at the Shellfish Purification Plant. No shellfish areas are open to unrestricted harvesting. Lobsters are abundant throughout the Harbor and are caught either in traps or by diving, for recreation as well as sale. Other marine animals such as bloodworms, other sea worms and numerous small fish may be found along the shorelines of many islands.

2.22 There are approximately 1200 acres of salt marsh remaining within the Harbor. These areas are ecologically important because they contain suitable habitat for wildlife, function as nurseries for marine organisms, especially finfish, and are significant sources of vegetative biomass to the food chain of the Harbor estuary.

2.23 Threatened and Endangered Species.

No threatened or endangered species of plants or animals are known to inhabit the Harbor area.

2.24 Water Quality.

Water Quality in Boston Harbor reflects the industrial and urban nature of the area and the estuarine characteristics of the Harbor itself. Water Quality classifications adopted by the Massachusetts Division of Water Pollution Control are derived from the intended reasonable use of bodies of water compatible with such needs as industrial and recreational requirements, aesthetics and aquatic resource management. Currently, the Boston Inner Harbor carries an SC water use classification: suitable for fish and wildlife propagation, fishing, industrial

processing and cooling. The Outer Harbor carries an SB classification: generally suitable for bathing, recreational boating, industrial cooling, excellent fish and wildlife habitation and some shellfishing.

2.25 A comprehensive water quality study was carried out in Boston Harbor by the New England Aquarium in 1970-72. The results of the study are summarized in Table 3.

TABLE 3 WATER QUALITY IN BOSTON HARBOR

<u>Physical Parameters</u>	<u>Minimum-Maximum Values</u>		
	<u>Inner Harbor</u>	<u>Outer Harbor</u>	<u>Outside Harbor</u>
T° C.	0-21	0-22	0-20.5
Salinity, ppt	4-32	21-34	28-34
<u>Chemical</u>			
D.O., ppm	2.41-11.49	6.02-14.0	6.48-12.65
Nitrogen mg/l			
Ammonia - N	0.01-1.10	0.01-1.02	0.01-0.40
Nitrate - N	.002-1.24	.001-.570	.002-.940
Phosphorus mg/l			
Total	0.05-1.02	.024-1.33	.010-.133
Ortho	.007-.924	.010-1.17	.018-.820
<u>Biological</u>			
Bacterial cts. (coliform)	0-96,000	0-10,000	0-4,200

Temperature and salinity measurements are characteristic of a well mixed harbor where freshwater inflow contributes only to local stratification. Dissolved oxygen (D.O.) levels are normally within the range set by the water quality standards for the Outer Harbor. Levels in the Inner Harbor, when time averaged, conform to the standard (5 ppm), but summer concentrations often fall below the minimum specified value of 3 ppm. The lowest levels are found near the river confluences probably indicating high biochemical oxygen demand (BOD) and chemical oxygen demand (COD) requirements of these rivers. The Outer Harbor is predominately well mixed, showing greater D.O. levels influenced by oceanic waters. BOD levels range from 2 to 9 ppm for the Inner Harbor, 1 to 4 for the Outer Harbor and 2 to 9 ppm for the Mystic River channel area.

2.26 Bacterial coliform counts vary throughout the Harbor. The highest counts are found in the Inner Harbor while the Outer Harbor generally has lower counts. The highest count of 96,000 organisms was obtained at the mouth of the Charles River. The highest levels in the Outer Harbor occur in the President Roads area between the Nut Island and Deer Island sewage treatment plant sludge discharge points. Coliform counts in the Outer Harbor routinely exceed the SB standard designated for that area.

2.27 In summary, the Harbor receives a heavy pollutant influx that is attributed to the highly urbanized activity of this region. The concentrations of pollutants are normally at their highest levels in the Inner Harbor and decrease with distance into the Outer Harbor and Massachusetts Bay. Localized high pollutant concentrations also exist in the area around the Nut and Deer Island sewage treatment plants. The primary sources of compounds creating a high oxygen demand are wastewater effluents and sludge discharges from sewerage treatment facilities and the chemical oxygen demand from industrial wastes.

2.28 The Inner Harbor sediments contain high levels of trace metals. Measurements from samples taken at the junction of the Island End River and Mystic River and at the mouth of the Charles River are indicated in Table 4 (New England Aquarium, 1972).

TABLE 4 TRACE METALS IN INNER HARBOR SEDIMENTS

<u>Metal</u>	<u>Island End River/ Mystic River</u>	<u>Charles River by Charlestown Bridge</u>
Zinc	985 ppm	1360 ppm
Cadmium	7.8	29
Lead	411	595
Nickel	87	75
Chrome	174	116
Copper	357	494
Cobalt	6.8	17.5
Mercury	2.33	5.7
Molybdenum	7.5	14
Vanadium	1110	600

Metal concentrations are, in general, greater in the Inner Harbor than in the Outer Harbor. High metal levels are also found near sewage outfalls.

2.29 Air Quality.

Boston Harbor lies within the Metropolitan Boston Air Pollution Control District and is subject to the Commonwealth of Massachusetts regulations for the control of air pollution adopted under the provisions of Section 142D, Chapter 111, General Laws as inserted by Chapter 836 of the Acts of 1969.

2.30 Air pollution control legislation in Massachusetts was first enacted in 1869. However, effective legislation was not implemented until 1960 after an exceptional soot-fall occurred on May 13, 1960 in South Boston.

2.31 A concerted campaign began in 1961 to stop all open burning of rubbish, trash, demolition materials, scrap automobiles and scrap wire in Metropolitan Boston. Open burning of scrap autos and wire, previously a common practice, has been stopped. In the early 1960's large quantities of combustible demolition debris, principally from urban renewal efforts, were routinely reduced by open burning. This was stopped in 1964. At present such debris is largely disposed of by sanitary landfill or by burning on burn barges in Massachusetts Bay outside of Boston Harbor. In 1965 the Department of Public Works prohibited brush burning in highway land clearance contracts throughout the metropolitan district. The open burning of rubbish and brush at municipal and private dumps has been stopped.

2.32 In 1976, at the Kenmore Square monitoring station in Boston, the primary standard for total suspended particulates (the standard requisite to protect public health) was exceeded twice. The secondary standard for particulates, (requisite to protect the public welfare from any known or anticipated effects associated with the presence of particulates) was exceeded eighteen times. A major concern is that limitations to control particulates will limit industrial expansion in the area.

2.33 Noise.

Ambient noise levels vary greatly around the Harbor area. The amount of disturbance caused by a source of noise would depend on location and type of neighboring activity. All the communities around the Harbor except Cambridge and Somerville have adopted ordinances to control noise levels.

2.34 Historical-Archaeological Features.

Boston Harbor has played a significant role in American history and maintains a special place in its historic and cultural heritage. Historically, Boston and the surrounding communities have been a major focus of cultural, economic and political activity in the New England area. It has enjoyed the advantages of a natural deep-water harbor and access channels as well as the protection afforded by island breakwaters. These advantages of the Harbor have been exploited ever since European settlement of this country began and especially since the earliest phases of maritime industries.

2.35 For this reason, the derelict vessels and deteriorating structures which are now merely a liability in terms of safety and aesthetics may actually yield significant historic value. Before any action can be taken to remove these structures and vessels, it will be necessary to determine if any important historic and/or cultural resources or other aspects of our national heritage will be adversely affected.

2.36 As part of the planning process for this project, a series of investigations will be conducted to determine the presence of any significant cultural resources. At the feasibility level, a cultural resource reconnaissance has already been conducted to locate, inventory and define significant cultural resources when possible and distinguish between areas that are potentially sensitive to the project and those that are not sensitive. The results of the reconnaissance, to be found as Appendix 5 of the Feasibility Report, recommend a total of 122 structures which may constitute significant resources due to their historical associations and/or potential archaeological value. Ten of these structures are located within or directly adjacent to properties on the National Register of Historic Places. Derelict vessels were not examined in the reconnaissance, but will be considered in a separate study if the project proceeds to the design stage.

2.37 Existing Land and Water Uses.

The Inner Harbor waterfront was almost entirely developed for some commercial or industrial use in the past. The concentration of debris sources is a good measure of the underutilization of this land today. Extensive renovation has taken place in Downtown Boston, however, as exemplified by the Quincy Marketplace and adjacent public waterfront facilities and commercial and residential establishments.

2.38 Most of the Outer Harbor shoreline has also been disturbed by man, but it still presents many attractive vistas. There is relatively little industrial development in the Outer Harbor with the exception of the Weymouth Back River and Weymouth Fore River. The latter is the location of the only major shipyard in the area.

2.39 The Harbor waters are used for commercial shipping, recreational boating, commercial and sports fishing and swimming. Boston remains one of the Nation's major ports. There are forty-two yacht and sailing clubs and twenty marinas serving the recreational boating fleet. Commercial fishing has been described in the section on the ecological setting.

2.40 Boston Harbor is one of the few areas along the Massachusetts coastline which furnishes good sport fishing year round. The species fished include winter flounder, Atlantic mackerel, striped bass, rainbow smelt, Atlantic cod, pollock, Atlantic tomcod and red hake.

2.41 There are a number of active bathing beaches in the Harbor including Constitution Beach in East Boston, Carson Beach in South Boston, Tenean and Malibu Beaches on Dorchester Bay, Wollaston Beach in Quincy and Nantasket Beach in Hull. However, many are threatened with closure because of pollution.

2.42 Socioeconomic Setting.

As described by Table 5, dense urban concentrations of population surround the Inner Harbor with the cities of Boston, Cambridge, Somerville, Everett and Chelsea. As is to be expected, population densities vary inversely with the distance from the metropolitan core with the exception of the towns of Winthrop and Hull at the extremities of the bay. These towns, with very limited areas and considerable waterfront, have been subjected to a high level of development. While the populations of all the communities increased from 1900 to 1940, between 1940 and 1975 the populations of the core cities decreased while those of the suburban communities increased. The greater the distance from the core, the greater was the rate of increase. This is typical of the movement of population from cities which occurred since World War II. However, it is significant that the cities of Boston and Cambridge with their cultural roots, attractive residential areas, and (in the case of Boston) active urban renewal programs have been able to slow or reverse the exodus between 1970 and 1975 while the exodus from the largely industrial cities of Somerville, Everett and Chelsea has accelerated and spread to adjoining Revere to the extent that the population of Chelsea was lower in 1975 than in 1900.

TABLE 5 POPULATION CHARACTERISTICS OF BOSTON HARBOR COMMUNITIES

Community	Population			Population Density	Mean Income
	1900	1940	1975	1975 Persons/Sq.Mi.	1969 \$
Hull	1,703	2,167	10,572	4,179	10,669
Hingham	5,059	8,003	19,544	865	14,807
Weymouth	11,324	23,868	56,854	3,208	12,712
Braintree	5,981	16,378	36,822	2,555	12,758
Quincy	23,829	75,810	91,487	5,498	10,097
Boston	574,136	770,816	637,986	14,052	7,330
Cambridge	91,886	110,879	102,095	14,299	7,292
Somerville	61,643	102,177	80,596	19,562	8,315
Everett	24,336	46,784	39,713	10,590	9,366
Chelsea	34,072	41,259	25,066	11,551	7,923
Revere	10,395	34,405	41,292	6,534	9,621
Winthrop	6,058	16,768	20,359	10,950	12,496

2.43 The population movement from the cities to the suburbs has been such that those in the upper and medium income brackets have moved out of the cities, while those in the low income brackets have remained and, in fact, increased in numbers. As a result, the per capita income and, at times, the total tax bases of the cities have fallen while welfare rolls and schools have filled, with resulting fiscal crises. This trend in Metropolitan Boston is demonstrated by Table 5 where mean incomes in the core cities are lower than those in the suburbs.

2.44 Waterfront areas of the Inner Harbor communities have maintained a considerable amount of social cohesion during this period of population loss. The North End of Boston is a strongly ethnic community. Its population is primarily Italian. There is also a large Italian community in East Boston while South Boston has a strong Irish community.

2.45 Boston Harbor is surrounded by the Boston Metropolitan Area, the largest metropolitan area in New England, with a population approaching four million. While not one of the most rapidly expanding areas in the United States, the Boston Area is nevertheless maintaining a dynamic and expanding economy.

2.46 The Boston Area is well known for its many universities and colleges, some of which are institutions of learning of the highest international renown. These in turn have spawned numerous research firms,

firms manufacturing advanced technical equipment and specialized consultant firms of national and international repute. This is reflected in earnings from professional services which includes university staff and consultants projected to be 18.2 percent of total earnings by 1980 as compared to an expected national average of 12.0 percent. In fact, it is likely that Greater Boston's prosperity will continue to depend largely on attracting firms in advanced technology who wish to tap the pool of highly skilled professionals available in the area. Since professional manpower is highly mobile and prefers to locate in areas of high social, cultural and recreational opportunities, any improvement in these factors will serve to improve the climate for these segments of the population and increase the chances that they will wish to remain here.

3.00 RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS

3.01 Plans for Future Uses of the Harbor.

There are many plans for the development and use of Boston Harbor which are described in some detail in Section B of Appendix 1. The major plans are described below.

3.02 The City of Boston has a plan for the redevelopment of the Charlestown Navy Yard as a national historic site combined with residential, commercial and light industrial uses. The plan of development envisages the conversion of many old and historic buildings into residential and commercial uses. If implemented, this will be a cornerstone in the renewal and renovation of both the Charlestown and Inner Harbor waterfronts.

3.03 Boston's Economic Development and Industrial Commission plans the conversion of the South Boston Navy Yard into a ship repair facility which is to be combined with a new Massport container terminal. Ship repair work has already commenced there, however the major portion of the project is still in the planning stages.

3.04 There are also plans for a government-subsidized apartment complex below Maverick Square in East Boston and for a waterfront park at the southwesterly corner of East Boston opposite the entrance to the Charles River.

3.05 In the longer term, the City of Boston plans the rehabilitation of the whole of its waterfront areas.

3.06 The major plan for the Outer Harbor is the Boston Harbor Islands Comprehensive Plan prepared by the Metropolitan Area Planning Council published in 1972 in response to an act of the Massachusetts Legislature in 1970 which created the Boston Islands State Park. This plan envisions the public acquisition of all the islands in the Harbor and their maintenance as recreational and conservation areas.

3.07 Relationship to Plans for the Future Development of the Harbor.

The project will have a major positive impact upon plans for the future development of the Harbor since, in most cases, these plans require the removal of existing derelict structures to allow redevelopment of the waterfront. The plan for the South Boston Navy Yard includes the removal of five dilapidated finger piers to allow for redevelopment of the site. The Charlestown Navy Yard Plan includes the

removal of a number of piers, but these are not dilapidated and would not be removed by the project. Plans for residential redevelopment and the construction of a park in East Boston would not only be assisted by the clearance afforded by the removal of the debris on the site, but also by the improved visual aspect afforded by the clearance of adjacent derelict piers. The project is unlikely to have a major impact on the Boston Harbor Islands Plan as debris is thinly dispersed around the islands and relatively unobtrusive when compared to the Inner Harbor waterfront. However, some removal of derelict structures will be necessary to allow for the construction of recreational and docking facilities.

4.00 PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

4.01 Activities Associated with Debris Clearance and the Types of Impacts Involved.

Impacts from the clean-up operations are briefly identified in this section and discussed more fully in the following section.

4.02 Collection - Collection will consist of picking up floating debris, loading it into a barge and transporting it to a staging area. Specialized equipment may or may not be used. The environmental impacts of this work are expected to be insignificant.

4.03 Removal - Removal will involve the breaking up of derelict structures and sunken vessels, the pulling of piles, clearance of loose onshore debris, loading onto barges, and transport and unloading at staging areas. The proposed clamshell, operating from a barge, will be capable of breaking up structures by grabbing, twisting and pulling them. All piles will be pulled intact with the exception of areas unlikely to be developed or those where complete removal might undermine a nearby structure; in these cases, piles will be cut at the ground line.

4.04 These activities will involve some noise and disturbance to the Harbor bottom as well as the displacement or destruction of small numbers of organisms dwelling on or in the vicinity of the debris sources. Some of the debris sources may be of historical/archaeological value and require mitigative action.

4.05 Disposal - Disposal includes the reduction of the debris at the staging area, loading onto trucks, transport to the landfill and burial. The debris will be reduced by bulldozers. This activity will compact the debris, thus reducing the number of truckloads required and easing the task of burying it. The planned level of operation will involve an average total of 6 truckloads of debris per day being carried to the landfill from South Boston for approximately 580 crew-days and from Hingham for approximately 45 crew-days.

4.06 The activities at the staging area will generate a certain degree of noise. Use of construction equipment will create some air pollution, but it is not considered significant.

4.07 Discussion of Likely Impacts.

4.08 Enhancement of Harbor Setting -

4.09 Boating - The removal of debris and its sources will render the Harbor more amenable to recreational boating by making navigation easier and safer. Recreational boating is one of the fastest growing outdoor activities in the United States. Projections indicate that the trend in increased recreational boating will continue. If a cleanup program were not implemented, the greater numbers of recreational craft would be exposed to collisions with increasing amounts of floating debris. A survey of boatyards indicated that recreational boats suffered approximately \$280,120 in damages in 1976 as a result of boat/drift collisions. Project implementation would be expected to reduce the amount of floating debris by 90%, resulting in an annual average savings of \$705,000 in repairs due to boat/drift collisions over the life of the project.

4.10 Aesthetic - The removal of dilapidated piers, sunken wooden vessels and shoreline piles of debris will do much to improve the visual aspects of the waterfront. The greatly enhanced Harbor setting will undoubtedly lead to increased recreational use of the Harbor, as well as provide unique opportunity for redevelopment of waterfront sites for residential and commercial purposes.

4.11 Water Cleanliness - The removal of debris and its sources will greatly improve the cleanliness of the water in the Inner Harbor where floating debris is dense. The effect will be less noticeable in the Outer Harbor where floating debris is less prevalent.

4.12 Disturbance from the Proposed Activities -

4.13 Ecology of the Harbor - The removal of piles and debris embedded in the Harbor bottom will result in disturbance of the bottom sediments. Using the methods of removal described, this will be limited to a temporary increase in turbidity which will not be noticeable in the turbid waters of the Inner Harbor. Minor quantities of heavy metals may be released in the Inner Harbor. Some benthic organisms may be destroyed in the immediate vicinity of the debris sites, but will be quickly replaced by immigrants from neighboring areas. Organisms living on or around the wreckage or piers will be killed or displaced.

4.14 Historical-Archaeological - The removal of 122 structures within the project area may constitute an adverse effect upon significant cultural resources if any of these sites are determined eligible for the National Register of Historic Places. If the project proceeds as planned, a cultural resource survey will examine these sites and evaluate them according to the criteria for eligibility for the Register. If any sites are determined eligible, mitigation will be planned in coordination with the Massachusetts Historical Commission and the Advisory Council on Historic Preservation.

4.15 Noise - Removal and disposal activities will involve noise from construction equipment. Most debris removal will be carried out away from residential areas and will be of a short term nature at any single location and hence, not have a significant impact. Activity at the staging areas will be of a more permanent nature. The South Boston staging area is about 3,500 ft. from the nearest residences in South Boston, from which it is screened by buildings, and 5,000 ft. from housing across the water in East Boston. The noise at the staging area is likely to be scarcely audible at these distances in an urban environment. Approximately ninety-three percent of the debris will be handled at this staging area. The remainder will be handled at the Hingham staging area which is about 1,500 ft. from a condominium complex across the Weymouth Back River and 600 ft. from the nearest housing in Hingham, from which it is screened by a hill, buildings and trees. Noise levels at the condominium are likely to reach 60-63 decibels, approximating the level of a relatively quiet conversation. Noise levels at the nearest housing in Hingham will reach approximately 65 decibels after allowing for some screening effect by the hill and buildings.

4.16 Aesthetics - Collection operations will have little visual impact. Removal operations will be carried out against a background of derelict structures and will also have little visual impact. The South Boston staging area is screened from inland view by buildings. It is too far from housing in East Boston to have a significant visual impact. Visual impact at the Hingham staging area is expected to be small. The Hingham staging area will be visible from the condominium complex across the river. However, the staging area is located in an unattractive industrial setting and will not stand out from its background of derelict ships, a disused incinerator and industrial buildings. The Hingham staging area is not visible from other residential areas nearby. The Marshfield landfill is not visible from any residential areas.

4.17 Traffic - Project operations will generate about six round trips by truck per day from staging areas to the sanitary landfill. About 93 percent of this traffic will be from South Boston. It is expected that the trucks from South Boston will traverse the industrial area and some residential areas along D Street, and Old Colony Avenue or Dorchester Avenue to Route 3. They will follow Route 3 to exit 32 and take Route 139 to Furnace Street which leads to Clay Pit Road and the landfill. From Hingham the trucks will turn east onto Route 3A at the gates of the Hingham Industrial Center and follow Route 3A to Furnace Street, reaching the landfill via Clay Pit Road. The project is not expected to add significantly to traffic on these roads and will therefore have only a minor impact.

4.18 Use of Sanitary Landfill - Sanitary landfills are a scarce resource with alternative methods of disposal of solid wastes more costly. However, the proposed landfill is limited to accepting construction debris and therefore no space for the disposal of other solid waste will be pre-empted. Landfills can have severe impacts on groundwater quality and surrounding vegetation. Harbor debris is largely composed of wood which will decompose very slowly compared with municipal solid wastes and therefore be less prone to pollute groundwaters or to produce gases which could kill surrounding vegetation. When completely filled, the landfill will be covered by an impervious soil layer to reduce leaching and water pollution and planted with vegetation. The Harbor debris will only require about six percent use of the total of the Marshfield site, which is a 30 acre disused gravel pit. The entire landfill will be restored to more productive use after it has been filled. On balance, the use of the landfill is not considered to be a significant negative impact.

4.19 Economic Activity - The removal of derelict piers will disrupt some marginal economic activities. These include scrap businesses, fishing, tug boats and commercial offices which operate on or from derelict piers. On removal of these piers, these activities will have to find new locations or close down.

4.20 Conversely, the removal of derelict piers will encourage the redevelopment of waterfront sites for more productive economic uses such as marinas, shops and offices. Redevelopment for high quality residential uses and improvements in residential access to adjacent waterfront areas is likely to spur general economic wellbeing in Harbor areas.

4.21 On balance, therefore, the proposal is expected to have a positive impact on economic activities.

4.22 Summary of Overall Impacts.

The project will have minor negative impacts involving displacement or destruction of organisms living on or around the wreckage or piers to be removed, including destruction of small numbers of benthic organisms, slight disturbance of Harbor sediments leading to temporary increases in turbidity and minor releases of heavy metals, slight noise and visual impacts to residences near the Hingham staging area, and some additional traffic on the roads. It will also involve some disturbances to marginal economic activities located on the piers to be removed. Some of the debris sources may be of historic/archaeological value and require mitigative action. On the other hand, the project will have significant positive impacts on the future uses of the Harbor, particularly recreational boating safety and general economic activity around the Harbor.

5.00 PROBABLE ADVERSE ENVIRONMENTAL IMPACTS
WHICH CANNOT BE AVOIDED

The project will not generate any major adverse impacts. Those which cannot be avoided are limited to displacement or destruction of organisms living on or around the wreckage or piers to be removed, including destruction of small numbers of benthic organisms, slight disturbance of Harbor sediments leading to temporary increases in turbidity and minor releases of heavy metals, minor noise and visual disturbance, minor increase in traffic on roads to the disposal area, and some dislocation of marginal economic enterprises at present operating on or from derelict piers. Some of the debris sources may be of historic/archaeological value, but mitigative action, where appropriate, should minimize potentially adverse impacts.

6.00 ALTERNATIVES TO THE PROPOSED ACTION

6.01 No Action.

The no-action alternative would avoid the impacts listed in the section above and would save the expenditure of \$19,464,000 to implement the project. It would, however, leave the Harbor with a major problem of floating drift and damage to recreational boats estimated at \$280,120 in 1976 and projected to rise to \$1,440,800 per annum by 2035. It would leave a large number of derelict structures on the waterfront which are a visual blight and a major discouragement for redevelopment in many areas. The presence of these structures would discourage private investments in waterfront areas and might require major investments of public funds to rehabilitate waterfront sites in a piecemeal fashion.

6.02 Implementation Alternatives.

6.03 Collection - A plan for collecting existing floating debris has not been specified, but will be chosen by the contractor at the time of implementation. However, any method would likely be based on the use of a catamaran-type vessel.

6.04 Removal - The alternative method of allowing the contractor to dredge for the purpose of gaining access to structures in shallow waters with relatively deep draft barges was considered. This would involve major negative impacts at both the location of dredging and at the spoil site. This alternative is not considered advisable unless a bidder can indicate a substantial cost saving. If this proves to be the case, completion of a detailed study will be required to compare the debris removal cost savings with the environmental costs incurred. In addition, a supplement to this Final Environmental Impact Statement would be issued.

6.05 Disposal -

6.06 Burning - Disposal by burning was considered as an alternative method of disposal. Open burning anywhere in the project area was rejected as it is prohibited by Massachusetts Air Quality Regulations. Burning at incinerators in the area which produce steam for local industries was considered. The fuel saved by this method of disposal, however, was outweighed by the additional project costs of \$1,900,000 (see Appendix 3, Table 1). Should the cost of incineration be reduced at the time of project implementation to the point where it would be less than the cost of landfill, then this alternative

will be considered. If impacts are different than those already described in this Final Environmental Impact Statement, a supplement will be issued.

6.07 Another alternative considered was to burn the debris in barges in the open sea at a sufficient distance from the shore to avoid air pollution in populated areas. However, a burn barge could not operate with unfavorable (onshore) wind conditions or rough seas. Winds are in a westerly direction, or offshore, about 61% of the time and the air is calm about 4 percent of the time. Other wind flows could prove to be undesirable for burning. Also, this alternative would cost an additional \$1,018,000. It was therefore rejected.

6.08 Re-use - Several re-use alternatives for the debris were considered including use for firewood, wood chips and mulch, hardwood lumber, paper pulp, charcoal, scrap lumber, telephone poles, railroad ties, pallet construction and as used piles. Both the public sector and the private market were investigated to identify outlets for the material. Some interest was expressed by the Massachusetts Department of Public Works (DPW) in grinding the wood debris to chips for use as mulch at the sides of highways. However, DPW has not made any commitment to accept it. No outlet could be found for re-uses in the private sector except as scrap lumber or used piling. Here the market was found to be saturated and no scrap dealer would agree to accept the debris in any form. Regretfully, therefore, re-use alternatives had to be rejected as not feasible at this time. It is recommended that re-use alternatives be investigated again and their adoption encouraged at the time of project implementation if a selected alternative would not require additional expenditure of public funds and would be environmentally acceptable. If impacts are different than those already described in this Final Environmental Impact Statement, a supplement will be issued.

7.00 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF
MAN'S ENVIRONMENT AND THE MAINTENANCE AND
ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The no-action alternative would involve a savings in costs and would avoid some minor short-term negative impacts. The project will, however, provide considerable enhancement of man's environment in terms of improved navigational safety and recreational opportunities, aesthetic gains and inducement of beneficial development in the Harbor and port.

8.00 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES
WHICH WOULD BE INVOLVED IN THE PROPOSED PROJECT
SHOULD IT BE IMPLEMENTED

An irreversible and irretrievable commitment of resources would be that of the materials comprising the derelict piers, sunken wooden vessels and shoreside piles of debris undergoing removal and disposal.

8.01 A minor loss of marine biota in the vicinity of the structures would occur, but no permanent effect on the overall populations are expected.

8.02 The labor, fuel and financial resources which would be expended if the proposed project were implemented are irretrievable.

9.00 COORDINATION

During the course of this investigation, in the late 1960's and early 1970's, and then again following its resumption in 1975, coordination and liaison were maintained with numerous Federal, State and local agencies. As a result of these interactions, of varying degrees of complexity, there have been contributions of information to this report which provide a degree of comprehensiveness not otherwise available.

9.01 The Corps has maintained close communication concerning this project with the U.S. Fish and Wildlife Service, Concord, N.H. Area Office, by virtue of the Fish and Wildlife Coordination Act. Considerations regarding plant and animal populations, especially rare and endangered species, have been coordinated through this Office.

9.02 Communication has also taken place with such other interests as the U.S. Coast Guard, Department of Housing and Urban Development, Massachusetts Executive Office of Environmental Affairs, Massachusetts Division of Marine Fisheries, Massachusetts Port Authority, Massachusetts Department of Public Works, Boston Redevelopment Authority, Boston Building Department, officials of the cities and towns within the study area, the Office of the Governor of the Commonwealth of Massachusetts, State and United States Senators and Representatives, and such organizations as the Massachusetts Bay Yacht Club Association.

9.03 On 11 July 1967, the initial (stage 1) Public Hearing for this project was held in Boston. Attended by about 60 persons, the intention of this meeting was to provide all interests the opportunity to express their views and desires prior to the actual start of the Corps investigation. Comments indicated that a waterfront cleanup program aimed at the elimination of all sources of debris was desired. On 30 March 1971 the Corps presented a statement of status of the Boston Debris Study to City of Boston officials, as well as State and other interests. Following resumption of the study in 1975, a number of meetings were held with various local, State and Federal representatives culminating in the Formulation Stage Public Meeting in Boston on 29 September 1977. This forum featured the detailed presentation of the Division Engineer's findings concerning the tentatively selected plan, including advantages and disadvantages of the various alternatives and, as well, solicited and obtained the views and desires of the public concerning the proposed alternatives.

9.04 This most recent meeting aided the Division Engineer in the collection of the information necessary to formulate a final plan which

will best meet the local interests' desires and needs without exceeding the scope of the study authorization. As a result, by letter dated 15 December 1977, then Massachusetts Governor Michael S. Dukakis reported State's endorsement of the Corps cleanup proposal and willingness to cooperate as required.

9.05 By letter dated 1 November 1979 Governor King reaffirmed the Commonwealth's support for the proposal.

9.06 This Final Environmental Statement is yet another step in the public involvement process. The Draft was available for review and comment by local, regional, State and Federal agencies and other interests for a period of 45 days after its issue, as announced in the Federal Register in July 1978.

9.07 The comments received and our responses to them may be found in Appendix B of this Final Statement.

REFERENCES

- Boating Almanac Company, Inc., "Boating Almanac 1977, Volume 1 - Massachusetts, Maine, New Hampshire", Severna Park, Maryland, 1977.
- Boston Redevelopment Authority, "1965/1975 General Plan for the City of Boston and the Regional Core", March, 1965.
- Boston Redevelopment Authority, "The Charlestown Navy Yard", 1977.
- Boston Redevelopment Authority, "Boston the Livable City", 1975.
- Boston Redevelopment Authority, "North End/Waterfront District Profile and Proposed 1977-1979 Neighborhood Improvement Program", fall 1976.
- Boston Redevelopment Authority, "Charlestown District Profile and Proposed 1977-1979 Neighborhood Improvement Program", fall 1976.
- Boston Redevelopment Authority, "Dorchester District Profile and Proposed 1977-1979 Neighborhood Improvement Program", fall 1976.
- Boston Redevelopment Authority, "South Boston District Profile and Proposed 1977-1979 Neighborhood Improvement Program", fall 1976.
- Boston Redevelopment Authority, "East Boston District Profile and Proposed 1977-1979 Neighborhood Improvement Program", fall 1976.
- Boston Shipping Association, "The Port of Boston Handbook 1975-1976", 1975.
- City of Boston, "Boston's People & Their Economy - Mayor Kevin H. White's Program, A Summary", July 1975.
- Massport, "Boston Fish Pier Feasibility Study", 1976.
- Massport, "The New Port of Boston", February 1973.
- Metropolitan Area Planning Council, "Boston Harbor Islands Comprehensive Plan", October 1972.
- Metropolitan Area Planning Council, "The 1976 Regional Open Space Plan, the Open Space and Recreation Program for Metropolitan Boston", 1976.

Naval Weather Service Detachment, "Climatic Study of the Near Coastal Zone, East Coast of the United States", Director, Naval Oceanography and Meteorology, June, 1976.

New England Aquarium, Research Department, Volume 1, "Water Quality Measurements of Boston Harbor", September, 1973.

New England Aquarium, Research Department, Volume 2, "Trace Metal Analysis of Boston Harbor Waters and Sediments", July 1972.

Storey, D. A., "The Massachusetts Marina Boatyard Industry 1972-1973", Mass. Agricultural Experiment Station, U. of Mass., Amherst; Bulletin No. 612, October 1974.

APPENDIX A

CORRESPONDENCE

RECEIVED PRIOR TO ISSUANCE

OF THE

DRAFT EIS



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
P. O. Box 1518
Concord, New Hampshire 03301

February 22, 1978

Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sir:

This is our conservation and development report on the Boston Harbor Debris Study, Massachusetts. The study is being made under authority of a Resolution of the Senate Committee on Public Works adopted March 18, 1966. This report was prepared under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-666 inc.), in cooperation with personnel from the Massachusetts Division of Marine Fisheries, the Division of Fisheries and Wildlife, and the Office of Coastal Zone Management.

We understand that this project concerns the feasibility of a one-time program to dispose of Boston Harbor's sources of floatable debris. The area covered includes 47 square miles of the Inner and Outer Harbors from Point Allerton at Hull to Deer Island. Some tributary waters are included.

Biological resources which could be affected by the proposed debris removal project include plant and animal communities that grow on pilings, piers, floats and dilapidated ships. These are commonly called fouling communities and consist of organisms such as algae, barnacles, sponges, mussels, amphipods and bacterial slimes. Fouling communities are a source of organic carbon production in harbor areas and can be important sources of detritus when other input sources are lacking. Fish are often associated with fouling communities because of an abundant food source and protection provided by the structures. Shorebirds such as gulls and terns may use some of the structures as perches.

Boston Inner Harbor contains a depauperate assemblage of fouling communities and associated fish populations. Pollution problems in the harbor and effects of harbor alterations prevent some biological systems from developing. The Inner Harbor waters are known to develop dissolved oxygen deficiencies which places a further stress on many biological systems.

In the Outer Harbor, well developed fouling communities appear and their makeup closely resembles those described above. Associated fish and

ether mobile organisms include the common mummichog or killifish (Fundulus heteroclitus) and silversides (Menidia menidia) and fourspine stickleback (Apeltes quadracus).

In our September 1, 1967, letter we expressed concern that some dilapidated structures might provide access for fishing and that their removal would cut off such access. The feasibility study currently being reviewed indicates that structures which can be repaired and again become useful will not be entirely removed but would be rehabilitated. This appears to accomplish our first recommendation in the 1967 letter.

The remaining two recommendations are no longer appropriate to this study.

The removal of piers, pilings, sunken vessels and other debris in Boston Harbor would eliminate habitat for fouling communities. Most of the debris sources are located in the Inner Harbor where fouling communities are presently able to survive only marginally because of water quality limitations. However, water pollution abatement measures which have been mandated by the Clean Water Act may reverse this situation in the future. The State of Massachusetts is presently reclassifying the Inner Harbor as Class SC waters and the Outer Harbor as Class SB. In the present situation, we do not expect significant biological resources to be lost as a result of debris removal in open water areas.

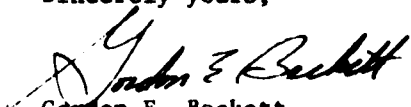
Based on current information our primary concern relates to sources of debris which may be located in mud flats or salt marsh in the Outer Harbor and tributaries. If debris is located in such areas it may be practical to remove it manually instead of using heavy equipment. Alternatively, it may be prudent to leave the debris in place to avoid disturbing productive habitat. Such sites should be reviewed carefully to determine the most appropriate method of debris removal or if potential damage to fish and wildlife habitat could exceed the value of removal of the debris.

The ultimate disposal location and/or method of getting rid of the debris could be of concern to our agency. We recommend that the debris be used as a beneficial resource if possible.

Should the project become authorized, we recommend that authorized representatives of the Natural Resource and Construction Agencies do an on-site inspection of each debris source in the Outer Harbor. Problem sites could be noted, if present, and solutions explored prior to finalization of the design memorandum. The disposal locations and/or methods could be handled in a similar fashion if necessary.

We appreciate the opportunity to comment on this project.

Sincerely yours,


Gordon E. Beckett
Supervisor

APPENDIX B

COMMENTS AND RESPONSES

ON THE

DRAFT EIS

**Advisory
Council On
Historic
Preservation**

1522 K Street NW.
Washington D.C.
20005

January 25, 1979

Mr. John P. Chandler
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

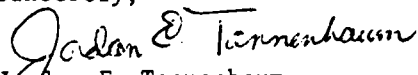
Dear Mr. Chandler:

Thank you for your request for comments on the environmental statement for the removal and disposal of sources of floatable debris, Boston Harbor, Massachusetts. Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 and the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800), we have observed that your draft environmental impact statement mentions properties that are listed in the National Register of Historic Places; determined eligible for inclusion in the Register; and properties identified in your area-wide survey as being potentially eligible for inclusion in the Register.

1. Section 800.4(a) of the Council's Procedures sets forth the method of evaluating the historical, archeological and cultural significance of such properties. We request that you evaluate the significance of the 122 properties listed in Appendix 5 of your draft environmental impact statement entitled Cultural Resource Reconnaissance and inform us of your findings. If this evaluation results in a determination by the Secretary of the Interior that the properties are eligible for inclusion in the National Register, you should follow the remaining steps in Section 800.4 to evaluate the effect of the undertaking on the property and, if appropriate, obtain the Council's comments. Should you have any questions or require additional assistance, please call Ms. Sharon S. Conway at 202-254-3967.

Thank you for your cooperation.

Sincerely,


Jordan E. Tannenbaum
Chief, Eastern Office
of Review and Compliance

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1. The present debris study is in the feasibility stage of planning, and cultural resource studies for the project have consisted of a "cultural resource reconnaissance" to locate potentially significant resources. If congressional authorization is obtained for further phases of project planning, a "cultural resource survey" will be undertaken to assess the significance of the 122 properties noted in the Feasibility Report and EIS, and to determine project effects upon them.



UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-3111

August 29, 1978


Colonel John P. Chandler
Department of the Army
New England Division, Corps
of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Chandler:

This is in reference to your draft environmental impact statement entitled "Removal and Disposal of Sources of Floatable Debris, Boston Harbor, Massachusetts." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving seven copies of the final statement.

Sincerely,


Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure: Memo from NOAA - National Ocean Survey



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Rockville, Md. 20850

OA/C52x6

AUG 24 1978

TO: PP - William Aron
FROM: OA/Cx1 - *Gordon G. Lill*
SUBJECT: DEIS #7807.04 - Removal and Disposal of Sources of Floatable
Debris from Boston Harbor, Massachusetts

The subject statement has been reviewed within the areas of NOS responsibility and expertise, and in terms of the impact of the proposed action on NOS activity and projects.

The following comment is offered for your consideration.

1. The proper amount of attention has not been given to tidal and nontidal conditions. As stated in the report, the "Boating Almanac 1977," Volume 1, was used for current information. A far more suitable publication is "Tidal Current Charts, Boston Harbor" by NOS which contains data obtained as recently as 1971. This publication is attached for your information.

Attachment



U.S. DEPARTMENT OF COMMERCE

1. As noted in the comment, detailed tidal current information is available in the publication "Tidal Current Charts, Boston Harbor," published by the National Oceanic and Atmospheric Administration, National Ocean Survey, Rockville, MD 20852 in 1974, and reprinted in 1977.



REGION
REGIONAL OFFICE
BOSTON, MASSACHUSETTS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AREA OFFICE
15 NEW ENGLAND STREET
BOSTON, MASSACHUSETTS 02114

AREA OFFICES
Boston, Massachusetts
Hartford, Connecticut
Manchester, New Hampshire

IN REPLY REFER TO:

1.1SE

Colonel John P. Chanler, Division Engineer
New England Division, Corps. of Engineers
421 Trapelo Road
Waltham, Massachusetts 02154

Attn: NED PL-C

Subject: Draft Environmental Statement
Removal and Disposal of Sources
of Floatable Debris

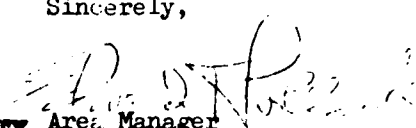
Dear Sir:

The DEIS on the "Removal and Disposal of Sources of Floatable Debris" submitted to Regional Office of HUD was sent to the Boston Area Office for review and comment.

This office has reviewed the DEIS and finds no conflicts with HUD objectives. The removal of debris sources along the waterfront will not only enhance the visual aesthetics of the shorefront but will reduce and/or eliminate serious hazards to navigation in the harbor.

Thank you for giving this office the opportunity to review and comment on the DEIS.

Sincerely,


DEPUTY Area Manager

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

No response required.



United States Department of the Interior

OFFICE OF THE SECRETARY
Northeast Region
15 State Street
Boston, Massachusetts 02109

August 24, 1978

Colonel John P. Chandler
Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Chandler:

This is in response to your request for the Department of the Interior's comments on the draft environmental statement for removal and disposal of sources of floatable debris, Boston Harbor; Plymouth, Norfolk, and Suffolk Counties, Massachusetts (ER-78/657).

We have reviewed the document and find that it is generally adequate. However, we have the following specific comments:

Section 1.07, Detailed Description of the Project

1. In the September 1, 1967, and February 22, 1978, U. S. Fish and Wildlife Service letters to the Division Engineer, concern was expressed that some dilapidated structures might provide access for fishing and that their removal would cut off such access. It was recommended that some of the old piers or other facilities now providing sport-fishing opportunities be retained and repaired or rebuilt to provide safer and possibly increased fishing opportunities and it was requested that this be incorporated into the project plan.
2. The Corps should be reminded that both the National Park Service and the Boston Redevelopment Authority are amidst development planning for the preservation and use of the Charlestown Navy Yard. Close coordination in detailed project planning and adequate advance notice of physical work in that area should be accomplished to ensure mutual benefit to all parties.

Section 4.00, Probable Impacts of the Proposed Action on the Environment

3. While the debris cleanup would provide for safety improvements and esthetic enhancement, there will be some esthetic and recreational losses of nostalgic or traditional activity and perhaps some loss in marginal economic enterprises. The careful identification of significant cultural resource values and/or the potential for safe recreational activity in these areas would control such losses.

Sincerely yours,

A handwritten signature in cursive script that reads "William Patterson". The signature is written in dark ink and is positioned above the typed name and title.

William Patterson
Regional Environmental
Officer

U.S. DEPARTMENT OF THE INTERIOR

1. A review of the Debris Inventory will be undertaken at the next stage of this study. At that time consideration will be made of factors pertinent to the potential removal of individual debris sources from the inventory. Continuing coordination will be maintained between the Corps and the U.S. Fish and Wildlife Service under the Fish and Wildlife Coordination Act with regard to those debris sources of concern relative to the Act. The Corps will develop a feasible mitigation plan if necessary.
2. Close coordination between the Corps and the National Park Service and the Boston Redevelopment Authority will be maintained concerning the preservation and use of the Charlestown Navy Yard, including adequate advance notice of physical work in that area.
3. We concur. Also see answer to comment #1.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

August 24, 1978

Colonel John Chandler
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Chandler:

We have completed our review of the Draft Environmental Impact Statement (EIS) for Removal and Disposal of Sources of Floatable Debris in Boston Harbor and are forwarding the following comments for your consideration in preparing the Final EIS.

We fully support the goals of the project since the removal of debris, both stationary and floating, will serve to improve the water quality of the Harbor through better flushing characteristics. However, we are concerned with certain aspects of the selected disposal method/location and hope that the Final EIS would contain further information concerning an analysis of alternatives.

1. There is a lack of necessary information concerning the selected disposal site in Marshfield. The EIS does not discuss in enough detail the potential impacts of use of this site. Specifically, there is little discussion of the potential effects of disposal on groundwater resources. The Marshfield site is located in glacial outwash-plain deposits. These deposits are composed primarily of very permeable horizontally bedded sands and gravels. The aquifer below the proposed site has been estimated to be capable of yielding up to 300 gpm of groundwater. In light of this capability and the possibility that groundwater could be contaminated by creosote and other waste materials we feel that the potential impacts on the Marshfield site should be investigated more thoroughly and alternative sites should be considered.

2. We also feel that the Final EIS has not presented sufficient information regarding the possibilities of burning of waste material and capture of waste heat. Specifically, there is no evidence of coordination with Resco officials and no comparison of transportation costs between a Resco (Saugus) alternative and use of the Mansfield site.

Colonel John Chandler
Page Two
August 24, 1978

We hope that the Final EIS will address the above issues. In accordance with our national rating system, a copy of which is enclosed, we have rated this Draft EIS LO-2.

If you have any questions regarding our comments, please feel free to contact John Lynch of my office at 223-0400.

Sincerely,

Wallace E. Stickney

Wallace E. Stickney, P.E.
Director, Environmental & Economic
Impact Office

Enclosure

EXPLANATION OF EPA RATING

Environmental Impact of the Action

LO -- Lack of Objections

EPA has no objections to the proposed action as described in the draft environmental impact statement; or suggests only minor changes in the proposed action.

ER -- Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating federal agency to reassess these aspects.

EU -- Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1 -- Adequate

The draft environmental impact statement sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 -- Insufficient Information

EPA believes that the draft environmental impact statement does not contain sufficient information to assess fully, the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft environmental impact statement.

Category 3 -- Inadequate

EPA believes that the draft environmental impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft environmental impact statement is assigned a Category 3, no rating will be made of the project or action; since a basis does not generally exist on which to make such a determination.

U.S. ENVIRONMENTAL PROTECTION AGENCY

1. As indicated in Paragraphs 1.15, 1.16 and 4.18 of the EIS the disposal site in Marshfield is licensed by the town of Marshfield and the Commonwealth of Massachusetts and is subject to regular inspection by both of these governments. The disposal plan is approved by the Massachusetts Department of Environmental Quality Engineering. The debris to be buried, comprised almost entirely of wood and creosote, will decompose very slowly compared with municipal solid wastes and therefore will be less prone to pollute the groundwater.

2. The Draft Feasibility Report compared the potential of burning of waste material (incineration) and capture of waste heat at both Braintree and Saugus (Resco) to the selected disposal plan. As supported by the figures presented in Table 2, Appendix 3 of that report, this alternative was rejected based on additional project costs of \$1,600,000 for the Braintree incinerator and \$2,600,000 for the Saugus incinerator. Coordination with officials at both incinerators took place in order to develop these figures. Based on December 1979 price levels, the \$1,600,000 cost for Braintree has now increased to \$1,900,000 and a likewise increase would be projected for the Saugus facility. In view of the country's ongoing emphasis on conservation and reuse of resources, the possibility of burning of waste material and capture of waste heat will be explored again, in detail, during the postauthorization planning stages of the project.

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Environmental Impact of the Action

LO -- Lack of Objections

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DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Commander (obr)
First CG District
150 Causeway Street
Boston, MA 02114
Tel: 617-223-0645

16591

1 SEP 1978

Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

Subj: DEIS for cleanup of floatable debris sources in Boston Harbor, Mass.

1. We have reviewed the Draft Environmental Impact Statement prepared for the proposed cleanup of floatable debris sources in Boston Harbor. In general, the statement is readable and informative. We note that the proposal includes the removal of the fenders at certain bridges in the harbor area. As these bridges are under Coast Guard jurisdiction, we have the following comment.
2. The removal of the fenders will violate the Federal permits issued for the construction of these bridges. However, this fact is not mentioned in the DEIS. The owners of the bridges should be requested to seek Coast Guard approval of the proposed alterations prior to the start of work. If this is not done, the owners should be required to immediately rebuild the fenders.
3. In another matter, Part A, Technical Report, Appendix 2 of the DEIS the REPAIR item states that the Congress Street bridge is permanently closed to navigation. Actually, the City of Boston is permitted to maintain the drawspans in the Congress and Summer Street bridges over Fort Point Channel in a closed position. The draws are to be returned to an operable condition within six months after notification from the Commandant, U. S. Coast Guard to take such action.

W. J. Naalty
W. J. NAULTY
By direction

U.S. COAST GUARD

1. The comment is valid. Any work at the bridges will be pre-coordinated with the Coast Guard.
2. The appropriate change has been made per your comment. See page A-16, paragraph 31 of Appendix 2 of the Feasibility Report.



PAUL GUZZI

Secretary of the
Commonwealth

The Commonwealth of Massachusetts

Office of the Secretary

Massachusetts Historical Commission

294 Washington Street Boston, Massachusetts 02108

(617) 727-8470

July 11, 1978

Mr. Joseph L. Ignazio
Chief, Planning Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

Re: Boston Harbor Debris Study

Dear Mr. Ignazio:

The Massachusetts Historical Commission has reviewed the Boston Harbor Debris Study prepared by Valerie Talmage for the U.S. Army Corps of Engineers. The methodology employed to develop and test a model for identifying sensitive areas was clearly stated and tested. The Massachusetts Historical Commission concurs with the author's recommendations for intensive survey, as listed on pages 97-119 and Appendix II with the sole exception of the shore front dump on Georges Island. The Metropolitan District Commission has done an archaeological study of the Georges Island dump; the material consists primarily of World War II debris.

If the MHC can be of further assistance, please contact Sarah Chalkley Hubbell, Archaeology Coordinator.

Sincerely,

Patricia L. Weslowski

Patricia L. Weslowski
State Historic Preservation Officer
Acting Executive Director
Massachusetts Historical Commission

PLW/SCH/lh

xc: Geoff Moran
John Wilson



PAUL GUZZI

Secretary of the
Commonwealth

The Commonwealth of Massachusetts

Office of the Secretary

Massachusetts Historical Commission

294 Washington Street Boston, Massachusetts 02108

(617) 727-8470

July 20, 1978

Joseph L. Ignazio, Chief
Planning Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

Re: DEIS, Removal and Disposal of Sources of Floatable Debris,
Boston Harbor

Dear Mr. Ignazio:

The Massachusetts Historical Commission has reviewed the Draft Environmental Impact Statement for removal of sources of floatable debris in Boston Harbor. We feel that the DEIS adequately addresses possible effects to historic and archaeological resources. We look forward to working with you in the future.

Sincerely,

Patricia L. Weslowski

Patricia L. Weslowski
State Historic Preservation Officer
Acting Executive Director
Massachusetts Historical Commission

PLW/VT/1h

MASSACHUSETTS HISTORICAL COMMISSION

1. The information provided concerning the Georges Island shorefront dump has been noted. Present planning has eliminated all shorefront dumps from the proposed debris removal program.



ENVIRONMENTAL
PLANNING OFFICE

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

TEL 727-8880

September 7, 1978

Mr. Joseph L. Ignazio
Chief, Planning Division
Department of the Army
Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02154

Re: Draft EIS, Removal and Disposal of
Sources of Floatable Debris

Dear Mr. Ignazio: -

We have reviewed the above draft Environmental Impact Statement.
While we have attached some detailed comments on the statement, we offer
these observations in the context of our overall support for this badly
needed debris clean-up program.

Yours truly,

Libby Blank
Director of Environmental Planning

PBC/co

9-8-78

METROPOLITAN DISTRICT COMMISSION COMMENTS ON

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

REMOVAL AND DISPOSAL

OF

SOURCES OF FLOATABLE DEBRIS, BOSTON HARBOR

- Page 1-3 | Summary describes project as a "one time" cleanup. Para.1.09 indicates a first cost of \$15M., then goes on to indicate a 50 year life & yearly costs of \$1+M, without explaining the apparent inconsistency.
- Page 1-6 | Disposal of this amount of wood waste by burying^o wastes a valuable energy resource, or a valuable construction material resource, etc. and also takes up scarce land fill space. This area of the EIS needs more work. In addition, the estimated cost of \$1.6M is only a little over 10% of the project costs, which is a questionable estimate. The land fill in Marshfield is about the same road distance as the reclamation facility in East Bridgewater, where the wood could become useable fuel.
- Page 2-8 | 3. Table 4 refers to Trace Metal in waters while adjacent text refers to sediments.
- Page 2-10 | 4. Hopefully the Historical-Archaeological aspect will be broad enough to consider more than "if something historic happened here." Often the design of the structure or vessel has considerable significance, as well as other technology of its use, construction, etc.
- Page 3-1 | 5. Almost all information given for future use of the harbor is related to land use, housing, parks, etc. More emphasis should be given to marine use of the harbor in relation to this project, including shipping, fishing, etc.
- Page 4-1 | 6. See comment on Page 1-6
Suggested alternate uses for wood-direct as fuel, conversion to fuel via East Braintree facility, chipping-ground cover, sludge composting filler, paper mill input.

Page 4-2 7. Para. 409 Annual boat damage \$280,120 in '76. Savings in boat drift collisions by implementation of project=\$617,000-by reducing debris by 90%?

Page 4-2 8. Para.4.11 The Boston Harbor water pollution is not caused only by floating debris. The debris is not reflected in the values in table 3, page 2-7.

9. Para. 4.14 The impression given here and elsewhere in this EIS is that historical impacts will be considered only if does not interfere with the removal program.

Page 4-4 10. Para. 4.19 Relocation help should be given to businesses, etc. that are forced out due to project.

11. Para. 4.20 Again the emphasis is on shops, offices, high quality residential access to the water. There should be more emphasis on marine use of this major New England Port and the project's benefits to the economy.

General Comments

* There are no comments on the following relevant topics:

12. 1. What is debris (esp. in structures).
13. 2. Taking of private property without compensation
14. 3. Trespassing on private property
15. 4. Floating non wood items-drums, plastics.
16. 5. Collection of other waterfront trash-not floatables.

17. * There is no reference in this report to the Massachusetts Coastal Zone Management Plan.

18. * Appendices are referred to in the text, but none is attached to the report.

PBC/co

METROPOLITAN DISTRICT COMMISSION

1. The \$1+ million average annual costs is the first cost or cost of construction for the project, put on an annual basis using an amortization rate of 7 1/8% over the fifty year project life.
2. Reuse of collected debris will be reconsidered during the post-authorization planning stages of the project. The Marshfield landfill accepts only construction debris. Thus, space for disposal of other solid wastes will not be preempted.
3. The title of Table 4 has been changed to: "Trace Metals in Inner Harbor Sediments."
4. If funds are authorized for further planning studies, the examination of the material and design of structures and vessels will play an integral part in the assessment of significance of identified historic period vessels and structures undertaken during the cultural resource survey.
5. The future uses of the harbor are expected to be similar to present uses. Paragraph 4.09 of the EIS discusses anticipated increases in recreational boating activity. Paragraph 3.03 indicates the proposed new Massport container terminal. Background information concerning use of the harbor for shipping, fishing, etc. may be found in Section 2 of the EIS, as well as in various portions of the Feasibility Report. As indicated in Paragraphs 4.09-4.11 of the EIS, the project should have a significant positive effect for users of the harbor waters resulting from the decrease in boat/drift collisions and improvement of harbor aesthetics and water cleanliness.
6. Reuse of collected debris will be reconsidered during the post-authorization planning stages of the project.
7. The \$617,000 figure has been changed to \$705,000. This is an annualized benefit, derived from the total anticipated savings over the life of the project.
8. Paragraph 4.11 speaks of water cleanliness, not water quality. Floating debris is not considered a water quality parameter.
9. A careful rereading of the paragraph noted should correct this impression. Also, see Paragraphs 2.35, 2.36, 4.22 and 5.00.
10. This is a non-Federal responsibility. Non-Federal interests must comply with the requirements as specified in the Uniform Relocation

Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as they apply to this project. Also see Appendix 6 of the Feasibility Report - the "Legal Section."

11. Benefits to recreational boating in the harbor are indicated in Section 4.09 of the EIS. Also see Sections 4.10 and 4.11 for discussions of enhancements due to improved aesthetics and water cleanliness.

12. Debris includes any wholly or partly dilapidated structure or any sunken vessel or other object that can reasonably be expected to collapse or otherwise enter the navigable waters of the United States as drift within a reasonable time period.

13. This project will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646. For further explanation of State, local and private responsibilities for drift and debris see Appendix 6 of the Feasibility Report.

14. As a prerequisite to implementation, non-Federal interests will be required to provide, at no cost to the government, all lands, easements, and rights-of-way required for project implementation and future maintenance.

15. All floating or floatable debris hazardous to navigation is included within the project scope.

16. Non-floatables are included within the project scope, in as much as they are integral parts of sources of debris.

17. The proposed activity complies with and will be conducted in a manner consistent with the Commonwealth's approved Coastal Zone Management Program.

18. The appendices are part of the Feasibility Report, copies of the Draft of which were available, upon request, as indicated in the transmittal letter to your agency accompanying the Draft EIS.



CITY OF BOSTON CONSERVATION COMMISSION / ROOM 911 / CITY HALL / BOSTON, MASSACHUSETTS / 02201



July 7, 1978

Joseph L. Ignazio
Chief, Planning Division
New England Division, Corps of Engineers
Department of the Army
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Mr Ignazio:

The Boston Conservation Commission is pleased to offer comments on the Draft Environmental Impact Statement on the proposed cleanup of floatable debris sources in Boston Harbor. The many positive impacts, including esthetic and economic, which can be expected to result from removal of dilapidated piers and the improved safety conditions for recreational boating far outweigh the minor negative impacts. The Commission compliments the Corps on the publication of an unusually clear and brief statement.

We have some corrections to the Air Quality section, page 2-9: The secondary standard for Total Suspended Particulates was exceeded 18 times in 1976 and the primary standard twice at the Kenmore Square monitoring station. Carbon monoxide and photochemical oxidants are of equal concern as TSP.

The Commission hopes that the cleanup project will be undertaken and completed at the earliest possible date.

Yours truly,

Robert E. Holland
Chairman

CITY OF BOSTON, CONSERVATION COMMISSION

1. The appropriate changes have been made on page 2-9 of the EIS.

Boston Redevelopment Authority

SEP 8 1978

U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sirs:

Re: Removal and Disposal of Sources of Floatable Debris -
Boston Harbor, Massachusetts
Draft Environmental Impact Statement

The Boston Redevelopment Authority has reviewed the above-referenced Draft Environmental Impact Statement. We agree that the proposed debris removal program, as described, should not cause any significant adverse environmental impacts and that upon completion of the project, the Boston Harbor water quality and surrounding area will be enhanced.

1. However, we do wish to reserve the opportunity to review the results of the proposed further investigations intended to determine the presence of any significant cultural/historical resources. We also would like to review any mitigation measures proposed to protect properties in, or adjacent to, National Register Districts or properties within the City of Boston limits.

2. In addition, we feel that the Corps should reconsider including in the project the shorefront dump located near Meridian Street in East Boston (shorefront dump #3, Figure A-77 of Feasibility Report), since this site does include wooden barges which are potential sources of floatable debris. We also encourage, as recommended in the DEIS, the further
3. study of practical and environmentally sound proposals for recycling of collected debris.

Sincerely,



Robert Ryan
Director

1 City Hall Square
Boston, Massachusetts 02201
(617) 722-4200

Boston Redevelopment Authority, an Equal Opportunity / Affirmative Action Employer

BOSTON REDEVELOPMENT AUTHORITY

1. If Congressional authorization is obtained for further planning phases, a cultural resource survey will be undertaken to assess the historical significance of identified properties and recommend mitigation strategies for any significant cultural resources in the project area. The resulting report will be available for review and comments.
2. The wooden barges cited are included in the Debris Inventory as wrecked or derelict vessels.
3. Recycling of collected debris will be reconsidered during the post-authorization planning stages of the project.

From:
Donald Falk
86 Bromfield Road
Somerville 02144
10 September 1978

To:
Joe Horowitz
Environmental Analysis Branch
New England Division
U.S. Army Corps of Engineers

Re: Boston Harbor Removal and Disposal of Sources of Floatable
Debris: Draft Environmental Impact Statement

I have read the draft EIS for the Boston Harbor Floatable Debris Removal Project, and find that it has not considered an important environmental impact which could result from the plan's implementation, namely the disturbance or elimination of certain resident shorebird populations. It appears that the Corps designed this project without knowledge of the location of these nesting populations, particularly since they are not documented in any of the References which formed the data base for the assessment of environmental impacts. However, I feel critical that the Corps did not attempt to more carefully understand the ecology of the Harbor before proposing this action.

The Corps has probably received a comment from Jeremy Hatch, an ornithologist and professor of biology at UMass/Boston; I will not duplicate the detailed information contained in his letter. However, I would like to review the specific sections in the draft EIS which I consider insufficient -- sections that should definitely be more thoroughly researched before the writing of the final EIS.

Section 2.20: The EIS recognizes that the amount of undeveloped land in the Harbor is "rapidly diminishing"; yet there does not seem to be any recognition of the implication of this fact, which is that any areas of wildlife habitat are in extremely short supply and need to be faithfully preserved or expanded, not reduced.

Later in this same section, there is a mention of the various categories of birds found in the Harbor ("shorebirds, migrating

waterfowl," etc.). No attempt appears to have been made to determine where these populations nest. Obvious as it might seem that this would be an important question, the draft EIS bypasses this subject completely. In fact, nesting populations of common terns (Sterna hirundo) have been identified at various times on at least two sites in the Harbor which might be destroyed by the Corps project:

Structure 505, off Ho Island (Map 13, page A-29, Appendix 5) is a known and documented major nesting site for common terns; in fact this is the largest single nesting site in the Harbor.

A structure in Pleasure Bay (could be #269, Map 6, page A-32, Appendix 5) was formerly another major nesting site until the storm of February 1978, when the structure was damaged.

A third structure in the Harbor, #301 off Long Island, has been identified as a potential nesting site, particularly if the structure were isolated from the mainland, so as to keep rats away.

Terns are largely shore-nesting birds which have adapted to abandoned piers as a substitute for the almost nonexistent undisturbed beach sites they otherwise occupy.

Section 2.23: While common terns are not strictly an "endangered" species over their entire range, their numbers are decreasing in the Boston Harbor area. No one has yet figured out why this is so, but it is certain that destroying their only remaining known habitat in the area isn't going to help any.

Section 4.12: "Organisms living on or around the wreckage or piers will be killed or displaced." This being the case, it should have been the Corps responsibility to ascertain carefully what does live on and around the structures they propose to destroy. In the present case, a valuable and desirable population of birds could have been eliminated because of this oversight.

Section 4.22: The evaluation that there would be only "minor

page 3

negative impacts" is, clearly, the result of the incomplete reconnaissance and inventory work done prior to the project proposal.

Section 5.00: Likewise.

Section 3.01: The word "minor" again is inaccurate, as the loss of nesting tern populations would be a serious, semi-permanent loss to the Boston Harbor natural community. If anything, the Corps should demonstrate their commitment to environmental protection and restoration of habitat, by exploring ways in which the proposed project might be used to help re-expand the already drastically reduced habitat in Boston Harbor. At the very least, there is a pressing need for the Corps to undertake a thorough inventory and nesting census in the Harbor, so as to avoid the kind of mistakes based on ignorance of which this might have been an example.

Very sincerely,



Donald Falk

Tufts University

Graduate Program in Environmental
Planning

DONALD FALK

Your concern for the local destiny of the Common Tern is appreciated. The information provided by you and Dr. Hatch has been made a part of the project record. See the response to comment #1 by the U.S. Department of the Interior. The status of the Common Tern will be considered during the further planning stages of the project.



The Commonwealth of Massachusetts

University of Massachusetts - Boston

Harbor Campus

Boston, Massachusetts 02125

Department of Biology

TELEPHONE (617) 287-1900

August 22, 1978

Division Engineer
NED Corps of Engineers
Waltham, Mass. 02154

Dear Sir:

This letter contains comments on the Draft EIS for the Boston Harbor Debris project. In brief, common terns nest on some of the old structures in the Harbor and I suggest that, rather than being removed, appropriate ones should be retained and repaired with this use in mind.

Common terns (*Sterna hirundo*) are familiar summer-visitors to the coasts of New England, appreciated by many for their beauty, and by sport-fishermen in particular for the way in which they reveal the presence of schools of bluefish and striped-bass. In recent years the population of Common Terns in Massachusetts has shown a steady (and well-documented) decline. If this decline continues for a few more years the species will be appropriate for the Commonwealth's list of threatened species (if such a list then exists). The reasons for this decline are not fully understood, but loss of nesting-sites is certainly part of the problem. Hence the importance of the abandoned piers etc. in Boston Harbor.

Typical sites for breeding colonies of Common terns are sandy islands and barrier beaches without ground predators. Such sites are increasingly threatened by (1) human uses (beach buggies, swimmers, etc.) (2) ground predators including dogs, raccoons, foxes and rats. (3) increasing populations of gulls, which preempt the space and also act as predators. Recently there has been an increasing tendency for terns and other bird-species to nest on roofs and other man-made structures where they are free from many of the disturbances of natural sites.

In recent years in Boston Harbor Common terns nested successfully on Snake Island (near Winthrop) in the early 1970's but since 1974 nesting has failed because of rats. This failure was despite intensive efforts by the Massachusetts Audubon Society to poison rats and eliminate the debris that sheltered them. Apparently coinciding with failures at Snake Island the terns shifted to the dilapidated piers in Pleasure Bay (South Boston) and near Hog Island (Hull). The top of the pier in Pleasure Bay disappeared in the winter of 77-78. In the 1978 breeding season about 140 pairs of common terns nested on the Hog Island Pier (with fair success) and a further 40 pairs persisted at Snake Island with very low success (possibly zero). The disadvantages of some sites, of which the present Hog Island Pier is an example, are that a dilapidated top of the pier permits young birds to fall through (to their deaths), this mortality is exacerbated by any disturbance

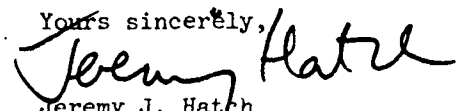
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so that it is inappropriate for any investigator to visit a pier-nesting-site when young terns are present. However, it would be relatively easy to repair the top of the piers (and to modify the habitat thereon, with shelter, etc.). Thus, the old piers have the special features of being (1) free from predators, (2) difficult for ground-predators to reach, and (3) providing ^{no} food for such predators during the winter (thus, no chance of rats persisting if they did arrive). Furthermore, (4) being easy to manipulate the habitat for optimum breeding success of the terns.

Terns are likely to shift their breeding sites if conditions get worse (this applies particularly to predation) but will generally return year after year to sites where they breed successfully. Work on or near sites used by terns would cause serious disturbance during the breeding season. This means that any and all such work should be done outside the period May 5 - August 15.

Preservation of breeding terns in Boston Harbor in proximity to the large metropolitan area will not only help to conserve these birds but also contribute to the broad spectrum of recreational and aesthetic opportunities that should be available to many persons in the Harbor. I trust that you will review your plans with this in mind: if I can be of assistance in this, do not hesitate to ask.

Yours sincerely,


Jeremy J. Hatch
Associate Professor of Biology

CC: Mass. Audubon Society (Richard Forster)
State Ornithologist

JEREMY J. HATCH

See response to comment by Donald Falk.

DATE
FILMED
- 8